

ABSTRACT

A drive system for a refrigeration compressor such as is used in a natural gas liquefaction plant, allowing the desired compressor speed and maximum turbine efficiency to be maintained throughout varying ambient temperature conditions. A gas turbine is used with an electric starter motor with drive-through capability located on a common drive shaft between the turbine and the compressor. A variable frequency drive (VFD) is connected between the electrical power grid and the electric motor for smooth startups, but also to allow excess turbine mechanical power to be converted to electrical power by the motor operating as a generator, and delivered to the grid at the grid frequency. Pulse width modulation technology may be used to reduce harmonic distortion in the VFD's output. The starter motor also functions as a helper motor when the turbine output is insufficient to drive the compressor at the rotational speed needed to meet throughput requirements.